

*E*valuation



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SUMMARY OF DOD ACQUISITION PROGRAM AUDIT COVERAGE

Report No. D-2001-178

September 10, 2001

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Abstract <p>This report will provide the DoD audit community with information to support their planning efforts and provide management with information on the extent of audit coverage of DoD acquisition programs. As of March 2001, DoD had 1,308 acquisition programs (exclusive of information technology programs). The primary objective of Defense acquisition is to acquire quality products that satisfy user needs with measurable improvements to mission accomplishment and operational support, in a timely manner, and at a fair and reasonable price. An acquisition program is a directed, funded effort designed to provide a new, improved, or continuing material, weapon, or information system capability, or service, in response to a validated need. DoD categorizes its acquisition programs based on the program's level of review, decision authority, and applicable procedures. Acquisitions are categorized as levels I, II, III, and IV. Eighty-five of the 1,308 programs are major programs (Category I) and are estimated to cost about \$782 billion. The remaining 1,223 smaller programs (Categories II, III, and IV) are estimated to cost about \$638 billion. In semiannual reports and in testimony to Congress, the Inspector General, DoD, has reported Defense acquisition as one of the top 10 DoD management challenges. Also, the General Accounting Office has identified DoD weapon system acquisition as a high-risk area.</p>		
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Acronyms

ACAT
GAO

Acquisition Category
General Accounting Office



INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
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September 10, 2001

MEMORANDUM FOR UNDER SECRETARY OF DEFENSE (ACQUISITION,
TECHNOLOGY AND LOGISTICS)
DIRECTOR, DEFENSE CONTRACT AUDIT AGENCY
DIRECTOR, DEFENSE CONTRACT MANAGEMENT
AGENCY
AUDITOR GENERAL, DEPARTMENT OF THE ARMY
AUDITOR GENERAL, DEPARTMENT OF THE NAVY
AUDITOR GENERAL, DEPARTMENT OF THE
AIR FORCE

SUBJECT: Evaluation Report on Summary of DoD Acquisition Program Audit
Coverage (Report No. D-2001-178)

We are providing this report for your information and use. This report contains no recommendations; therefore, written comments are not required.

We appreciate the courtesies extended to the evaluation staff. For additional information on this report, please contact Mr. Wayne C. Berry at (703) 604-8789 (DSN 664-8789) (wberry@dodig.osd.mil) or Mr. M. Thomas Heacock (703) 604-8756 (DSN 664-8756) (mheacock@dodig.osd.mil). See Appendix I for the report distribution. Evaluation team members are listed inside the back cover.

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Report No. D-2001-178

(Project No. D2001OA-0074)

September 10, 2001

Summary of DoD Acquisition Program Audit Coverage

Executive Summary

Introduction. This report will provide the DoD audit community with information to support their planning efforts and provide management with information on the extent of audit coverage of DoD acquisition programs. As of March 2001, DoD had 1,308 acquisition programs (exclusive of information technology programs). The primary objective of Defense acquisition is to acquire quality products that satisfy user needs with measurable improvements to mission accomplishment and operational support, in a timely manner, and at a fair and reasonable price. An acquisition program is a directed, funded effort designed to provide a new, improved, or continuing material, weapon, or information system capability, or service, in response to a validated need. DoD categorizes its acquisition programs based on the program's level of review, decision authority, and applicable procedures. Acquisitions are categorized as levels I, II, III, and IV. Eighty-five of the 1,308 programs are major programs (Category I) and are estimated to cost about \$782 billion. The remaining 1,223 smaller programs (Categories II, III, and IV) are estimated to cost about \$638 billion. In semiannual reports and in testimony to Congress, the Inspector General, DoD, has reported Defense acquisition as one of the top 10 DoD management challenges. Also, the General Accounting Office has identified DoD weapon system acquisition as a high-risk area.

Objectives. The objective of the review was to summarize the audit coverage for acquisition programs in category levels I through IV. We excluded information technology systems unless they were combat related.

Results. Fifty-eight reports on acquisition programs in category levels I through IV were issued from October 1, 1999, to March 31, 2001. Nineteen of the reports issued were from the General Accounting Office; 22 of the reports were from the Office of the Inspector General, DoD, of which 6 were classified; and 17 of the reports were from Military Department audit agencies. The reports addressed at least 129 acquisition programs in category levels I through IV out of the 1,308 programs. A review of the 52 unclassified reports disclosed the following systemic issues.

- Acquisition strategy (9 reports)
- Affordability/cost (10 reports)
- Establishment of program goals/exit criteria (5 reports)
- Managing hazardous materials in programs (5 reports)
- Open systems approach (1 report)
- Requirements (5 reports)

- Test and evaluation (9 reports)
- Total ownership/life-cycle cost (5 reports)

Additional problems were identified in the areas of analysis of alternatives; high-level architecture; and the correct acquisition categorization. The six classified reports addressed protection of programs against radio frequency weapons.

Independent internal audits should be used more extensively as an integral component of management controls by the acquisition program. The limited number of audit reports issued on weapon acquisition issues during the 18-month period covered by this survey belies the often-heard assertion that acquisition programs are overaudited. It is particularly telling that only 14 of the 906 ACAT I through III programs (2 percent) were addressed by comprehensive audit reports that reflected evaluation of all significant program aspects.

Points of Contact. For further information regarding audits of acquisition programs, please contact the following individuals.

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Table of Contents

Executive Summary	i
Introduction	
Background	1
Objectives	3
Findings	
Acquisition Program Audit Coverage	4
Appendixes	
A. Evaluation Process	12
B. Summary of Prior Coverage	13
C. Elements of a Program Management Review	30
D. Acquisition Category I Programs Reviewed	32
E. Acquisition Category II Programs Reviewed	36
F. Acquisition Category III Programs Reviewed	38
G. Acquisition Category IV Programs Reviewed	40
H. Matrix of Systemic Weaknesses	42
I. Report Distribution	44

Background

DoD Policies and Procedures. DoD Directive 5000.1, “The Defense Acquisition System,” October 23, 2000, and DoD Instruction 5000.2, “Operation of the Defense Acquisition System, ” Change 1, January 4, 2001, establish the policies and procedures for managing Defense acquisitions. The primary objective of Defense acquisition is to acquire quality products that satisfy user needs with measurable improvements to mission accomplishment and operational support, in a timely manner, and at a fair and reasonable price. The DoD should use performance and results-based management to ensure an efficient and effective acquisition system.

Successful acquisition programs fundamentally depend on competent people, rational priorities, validated requirements, performance measurement, and clearly defined responsibilities. An acquisition program is a directed, funded effort designed to provide a new, improved, or continuing material, weapon, or information system capability, or service, in response to a validated need.

Acquisition Category. An Acquisition Category (ACAT) is a designation assigned to an acquisition program based on the programs’ level of review, decision authority, and applicable procedures. Acquisition programs are categorized in levels I, II, III, and IV. The 85 major programs (ACAT I) are estimated to cost about \$782 billion while the 1,223 smaller programs (ACAT II, III, and IV) were estimated to cost about \$638 billion.

ACAT I. Programs designated as ACAT I are those that are Major Defense Acquisition Programs. A program is considered to be a Major Defense Acquisition Program if it is estimated to require an eventual total expenditure for research, development, test, and evaluation of more than \$365 million in FY 2000 constant dollars or for procurement of more than \$2.19 billion in FY 2000 constant dollars. There are two subcategories for ACAT I programs: ACAT ID and ACAT IC. The milestone decision authority for ACAT ID programs is the Under Secretary of Defense for Acquisition, Technology, and Logistics and for ACAT IC programs, the Component acquisition executive. The milestone decision authority is the individual designated to approve entry of an acquisition program into the next phase of the acquisition process. As of December 2000, there were 85 ACAT I programs.

ACAT II. Programs designated as ACAT II are those that do not meet the criteria for an ACAT I program but do qualify as major systems. A system is considered major if it is estimated to require an eventual total expenditure for research, development, test, and evaluation of more than \$140 million in FY 2000 constant dollars or for procurement of more than \$660 million in FY 2000 dollars. The Component acquisition executive is the milestone decision authority for ACAT II programs. As of January 2001, there were 132 ACAT II programs.

ACAT III. ACAT III programs are defined as those acquisition programs that do not meet the criteria for an ACAT I or II. The Component acquisition executive designates the milestone decision authority. As of January 2001, there were 689 ACAT III programs.

ACAT IV. ACAT IV programs represent all other nonmajor acquisition programs. The ACAT IV designation was removed from the acquisition lexicon; however, the Military Departments were given the option to retain the ACAT IV designation for lower-level programs. The Army, Navy, and Marine Corps still use the ACAT IV designation. The Army uses ACAT IV as the designation for those programs not designated ACAT I, II, III to differentiate between these nonmajor programs managed by a systems manager within a material command rather than a program, project, product manager. The Navy and Marine Corps define an ACAT IV as all other acquisition programs that do not meet the criteria of an ACAT I, II, and III. Further, Navy ACAT IV-T programs require operational testing and evaluation while ACAT IV-M programs are monitored by test authorities but do not require operational testing and evaluation. As of January 2001, there were 402 ACAT IV programs.

Management Challenges

From October 1, 1999, to March 31, 2001, in semiannual reports and in testimony to Congress, the Inspector General, DoD, has reported Defense acquisition as one of the top 10 DoD management challenges and questioned the adequacy of audit coverage of related issues. Also, the General Accounting Office (GAO) has identified DoD weapon system acquisition as a high-risk area. On March 15, 2001, the Deputy Inspector General testified before the Subcommittee on National Security, Veterans Affairs, and International Relations, the Committee on Government Reform, U. S. House of Representatives, on the top Defense management challenges. The Deputy Inspector General stated that the DoD is working toward the goal of becoming a world-class buyer of best value goods and services from a globally competitive industrial base. To meet that goal, the DoD has initiated an unprecedented number of major improvement efforts, including at least 40 significant acquisition reform initiatives. Despite some success and continued promises from ongoing reforms, the business of creating and sustaining the world's most powerful military force remains expensive and vulnerable to fraud, waste, and mismanagement. An inherent challenge throughout the DoD reform effort is ensuring that critically needed controls remain in place and that new processes have proper oversight and feedback.

Objectives

The objective of the review was to summarize audit coverage for acquisition programs in category levels I through IV. We excluded information technology systems unless they were combat related. For a summary of issues related to information technology acquisition see Inspector General, DoD, Report No. D-2000-162, "Summary of Audits of Information Technology," July 13, 2000. That report is located on our Internet website (www.dodig.osd.mil/audit/reports). See Appendix A for the discussion of the scope and methodology. Appendix B contains a summary of the issues addressed in each report.

Acquisition Program Audit Coverage

Fifty-eight reports on acquisition programs in category levels I through IV were issued from October 1, 1999, to March 31, 2001. Nineteen of the reports issued were from the General Accounting Office (GAO); 22 of the reports were from the Office of the Inspector General, DoD, of which 6 were classified; and 17 of the reports were from the Military Department audit agencies. The reports addressed at least 129 ACAT programs, of which 51 were ACAT I, 20 were ACAT II, 24 were ACAT III, and 34 were ACAT IV. A review of the unclassified reports (see Appendix B) disclosed findings on the following systemic issues.

- Acquisition strategy (9 reports)
- Affordability/cost (10 reports)
- Establishment of program goals/exit criteria (5 reports)
- Managing hazardous materials in programs (5 reports)
- Open systems approach (1 report)
- Requirements (5 reports)
- Test and evaluation (9 reports)
- Total ownership/life-cycle cost (5 reports).

In addition to the systemic issues, problems were also identified in the areas of analysis of alternatives; high-level architecture; and the correct acquisition categorization. The six classified reports addressed the protection of programs against radio frequency weapons.

Acquisition Audit Planning

In 1993, the Office of Inspector General and the Military Department audit agencies established a Joint Planning Group for acquisition program oversight to coordinate research on issues and discuss the status of previous, ongoing, and planned oversight coverage. Membership in the joint audit planning group includes representatives of the Inspector General, DoD, and the Military Department audit agencies. The purpose of the group is to maximize the exchange of information to prevent repetitive requests to management for data and duplicative projects.

The Military Department audit agencies use various methods to accomplish audit planning. The Army Audit Agency uses a combination of risk assessments, customer surveys, and continuous liaisons with customers to identify audit requirements. For the Navy, an audit planning group assists the Naval Audit

Service in developing an audit plan that closely aligns with the overall corporate goals and strategies of the Navy. The Air Force Audit Agency uses audit topic research and visits to their customers to identify audit requirements.

In the Office of the Inspector General, DoD, the issue area planning staff meet throughout the year with senior Office of Secretary of Defense, Military Department, and Defense agency management officials to encourage and facilitate their active involvement in the planning process. The Office of Inspector General is promptly alerted to DoD management requests for review coverage or management initiatives that could significantly affect ongoing or planned Inspector General, DoD, reviews. The planning staff develops and coordinates proposed annual audit and evaluation topics for review in the acquisition issue area. The planning is accomplished, to the maximum extent practical, jointly with the applicable DoD-wide joint planning group.

ACAT I Through IV Acquisition Program Audit Coverage

Between October 1, 1999, and March 31, 2001, the GAO; the Inspector General, DoD; and the Military Department audit agencies reviewed at least 129 of the 1,308 ACAT I, II, III and IV programs. We defined ACAT I through IV acquisition as areas of the acquisition program process up to and including fielding and initial provisioning.

We used the 44 elements from a program management elements audit guide (see Appendix C) to identify the amount of coverage each acquisition program received, and we defined full coverage as reviewing multiple elements of an acquisition program. If a program received multiple audits that reviewed different elements that in total could be considered a full review, we considered that as full coverage. We also considered the phase the acquisition program was in and the elements reviewed. We defined partial coverage as reviewing only one, two, or three elements of a program.

ACAT I. Of the 85 ACAT I programs, 51 had been reviewed. Six programs had full reviews and 45 programs had partial reviews. The six programs that had full reviews were the:

- Airborne Laser;
- C-17A Advanced Cargo Aircraft;
- F-22 aircraft;
- Joint Strike Fighter;
- Minuteman III Propulsion Replacement Program; and
- V-22 Osprey Joint Advanced Tactical Aircraft.

For specific ACAT I programs reviewed and the amount of coverage each ACAT I program received, see Appendix D.

ACAT II. Of the 132 ACAT II programs, 20 were reviewed during the evaluation time period. Two programs had full reviews and 18 programs had partial reviews. The two full reviews were for the Battlefield Combat Identification System and the Land Warrior Program. For specific ACAT II programs reviewed and the amount of coverage for each ACAT II program, see Appendix E.

ACAT III. Of the 689 ACAT III programs, 24 had been reviewed. Six of the programs had full reviews and 18 programs had partial reviews. The six programs that had full reviews were the:

- Advanced Tank Armament System;
- Armored Medical Evacuation Vehicle;
- Combat Survivor Evader Locator;
- Joint Biological Point Detection System;
- High Mobility Trailers; and
- Predator Short Range Assault Weapon.

For specific ACAT III programs reviewed and the amount of coverage for each ACAT III program, see Appendix F.

ACAT IV. Of the 402 ACAT IV programs, 34 had been reviewed during the time period. For specific ACAT IV programs reviewed and the amount of coverage for each ACAT IV program, see Appendix G.

Pre-Major Defense Acquisition Program. Two of the 20 pre-Major Defense Acquisition Programs had been reviewed during the time period. A pre-Major Defense Acquisition Program is an effort that may eventually become a Major Defense Acquisition Program. The systems reviewed were the Future Scout and Cavalry System and the Global Hawk.

Systemic Issues

We defined systemic problems as issues that were reported in four or more reports. However, if one report reviewed multiple acquisition programs and the majority of programs had problems identified, we included that as a systemic issue. For a matrix of acquisition program systemic issues, see Appendix H.

Acquisition Strategy. Nine reports noted problems with the acquisition strategy (see Appendix B, reports 1, 8, 15, 16, 19, 21, 37, 39, and 50). Acquisition strategy serves as the evolving roadmap for program execution from program initiation through post-production support. Examples of issues identified include the following.

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- The Joint Strike Fighter acquisition strategy will not ensure that the program will enter the engineering and manufacturing phase development with low technical risk (see Appendix B, report 37).
 - The acquisition strategy for High Mobility Trailers underestimated the risks of purchasing the system (see Appendix B, report 50).
 - A viable acquisition strategy to acquire the Battlefield Combat Identification System at the completion of the engineering and manufacturing development phase did not exist. The lack of strategy occurred because the milestone decision authority allowed the system to enter low-rate initial production without determining whether the program was affordable and without ensuring that the Army had fully funded the program (see Appendix B, report 1).
 - Opportunities existed to improve key program documents to better address the overall evolutionary acquisition strategy for the Common Low Observables Verification System (see Appendix B, report 19).

Affordability/Cost. Ten reports reported problems with affordability/cost of acquisition programs (see Appendix B, reports 5, 13, 14, 26, 29, 31, 35, 40, 43, and 50). Affordability/cost is the ongoing assessment of a program to ensure that it is being executed within DoD planning and funding guidelines, has sufficient resources identified and approved in the Future Years Defense Program, and is based on accurate cost and manpower data. Examples of these issues included the following.

- The Antiarmor Missile System increased from \$2.1 billion to \$3.1 billion because of the schedule increases and quantity reductions as well as poor estimates and technical difficulties (see Appendix B, report 14).
- Estimated costs of the Patriot program increased from about \$3.9 billion in 1994 to about \$6.9 billion in March 2000. A major reason for the cost increase was that the original cost estimate did not recognize the level of effort and difficulty associated with developing and producing a hit-to-kill missile compared with previous missiles (see Appendix B, report 31).
- The F/A-18E/F deficiencies identified by the operational testers will be costly to correct and raise questions about the appropriateness of entering into a multiyear procurement contract for full-rate production (see Appendix B, report 35).

Program Goals/Exit Criteria. Five reports reported problems with program goals/exit criteria (See Appendix B, reports 5, 7, 12, 25, and 47). Every acquisition program must establish program goals and objectives for the minimum number of cost, schedule, and performance parameters that describe the program over its life-cycle. Examples included the following.

- For seven of the nine programs reviewed, improvements were needed in the establishment of exit criteria at milestone decision

points and in reporting the status toward attaining exit criteria requirements to milestone decision authorities (see Appendix B, report 12).

- Exit criteria needed to be established for the Predator Short-Range Assault Weapon (see Appendix B, report 25).

Hazardous Materials. Five reports noted problems with hazardous material management (see Appendix B, reports 38, 42, 44, 51, and 52). The hazardous material management strategy and requisite hazardous material analysis ensure that the program investigates methods for eliminating and reducing the use of hazardous materials over the systems life-cycle. Examples of audit issues included the following.

- Program offices for nine programs reviewed generally planned and provided for the reduction and elimination of hazardous material in their programs. However, improvement was needed in developing a programmatic environmental, safety, and health evaluation; estimating the environmental costs for demilitarization, disposal, and cleanup of the system; processing an analysis of the potential environmental consequences of developing and deploying the system; and establishing a hazardous material reutilization and inventory management program (see Appendix B, report 38).
- Environmental management integration program personnel took proactive measures to identify and eliminate hazardous materials from the F-22 acquisition program design, but they could more timely update the programmatic environmental, safety, and health evaluation plan and accelerate the production environmental assessment (see Appendix B, report 42).

Open Systems Approach. The open systems approach enables rapid acquisition with demonstrated technology, evolutionary and conventional development, interoperability, life-cycle supportability, and incremental system upgradability without major redesign. The audit of “Use of Open Systems Approach for Weapon Systems,” (See Appendix B, report 34) stated that a number of systems proceeded into the next phase without meeting requirements to do so. Specifically, 14 of 17 systems were approved to enter the next stage without clearly defined open system design objectives or strategy for achieving the objectives. Also, DoD guidance on open systems did not require program managers to assess the impact of a given level of design openness on the long-term viability and affordability of systems.

Requirements. Five reports noted problems with requirements (See Appendix B, reports 6, 10, 14, 15, and 31). The purpose of requirements is to document deficiencies in current capabilities and to develop a mission need statement that new capabilities will provide. Examples of problems identified included the following.

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- The Integrated System Control needed to have its requirements updated for versions 1 and 2. In addition, the system should meet the user needs of the first digitized division. However, the material developer faces tremendous challenges and risk of not meeting user needs of the future digitized battlefield (see Appendix B, report 10).
 - User requirements for “One Semi-Automated Forces” were adequately identified, but the requirements needed to be clarified (see Appendix B, report 15).

Test and Evaluation. Nine reports noted problems with testing and evaluation (See Appendix B, reports 1, 3, 5, 9, 17, 18, 27, 30, and 33). Test and evaluation reveals information about the program and measures the performance of the system against established requirements. Examples of problems identified included the following.

- There was lack of funding to test 19 operational requirements for the Battlefield Combat Identification System and no plan to operationally test a production prototype of the system in cold, fog, snow, or rain (see Appendix B, report 1).
- There was significantly reduced mission reliability from the level recommended so that the On-Board Jammers for the Integrated Defensive Electronic Countermeasures could pass the operational test and evaluation and be installed on the F/A-18 E/F aircraft (see Appendix B, report 3).
- The V-22 will not successfully complete the key operational test and evaluation objectives required to be accomplished before a Milestone III full-rate production decision. That occurred because 22 deficiencies in major operational effectiveness and suitability requirements had not been corrected and would not be tested in time for the Milestone III review (see Appendix B, report 27).

Total Ownership/Life-Cycle Cost. Five of the acquisition reports noted problems with total ownership/life-cycle cost (See Appendix B, reports 4, 20, 24, 42, and 44). DoD should consider the total ownership cost of each acquisition program. Historically, a large amount of attention was paid to the initial cost of acquisition programs. However, the majority of total program costs are in the sustainment area. Examples of issues identified included the following.

- The system program office did not plan to develop a comprehensive total ownership life-cycle cost estimate for the Minuteman III Propulsion Replacement Program (see Appendix B, report 44).
- Program offices provided limited or no documentation showing how cost baselines and cost reduction initiatives were developed. Also, cost reduction initiatives did not relate to program cost drivers in some cases and program offices did not identify specific cost drivers in some cases (see Appendix B, report 4).

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- Disposal requirements program personnel could augment current life-cycle planning by including system storage and disposal requirements in F-22 program planning documentation and the draft life-cycle cost estimate (see Appendix B, report 42).

Other Issues. Although not systemic, there were several other recurring problems noted in the acquisition reports.

Three reports (see Appendix B, reports 7, 25, and 49) identified problems with a lack of analysis of alternatives. Alternative analysis broadly examines multiple elements of program alternatives including technical risk and maturity and cost.

- An exploration of potentially more affordable alternatives to the Predator Short-Range Assault Weapon had not been done despite significant cost growth and schedule breaches (see Appendix B, report 25).
- A decision needed to be made on which gunnery device would be the primary training device for the National Guard. The upgraded Abrams Full Crew Trainer should provide training effectiveness that is the same as or superior to that provided by the upgraded Conduct of Fire Trainer (see Appendix B, report 49).
- The DoD had not adequately analyzed or identified cost effective alternatives to Space Based Infrared System-low that could satisfy critical missile defense requirements (see Appendix B, report 7).

The Army Audit Agency reported (See Appendix B, report 28) that actions were inadequate that were taken by organizations to ensure all 24 simulations reviewed will be compliant with high-level architecture. Ten of the 24 simulations were not adequately progressing.

Other reports noted problems in the following areas.

- The C-17 flexible sustainment program (see Appendix B, report 22);
- The acquisition categorizations for the Joint Biological Point Detection System and the Land Warrior Program (see Appendix B, reports 23 and 47);
- The lack of independent logistics assessments (see Appendix B, report 32);
- The improvement of contract performance visibility for the Sensor Fuzed Weapon (see Appendix B, report 41);
- The software development plan for the F-22 (see Appendix B, report 42);

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- Evolved Expendable Launch Vehicle Program use of other transactions agreements (see Appendix B, report 46); and
 - The streamlining of internal management processes (see Appendix B, report 48).

Classified Reports. During October 1, 1999, to March 31, 2001, the Inspector General, DoD, issued six classified reports relating to the protection of programs against radio frequency weapons. For titles of the classified reports, see Appendix B.

Conclusion

As illustrated in the 58 reports relating to DoD ACAT I through IV acquisition programs issued from October 1, 1999, to March 31, 2001, DoD management of ACAT I through IV acquisition programs remains a complex challenge facing DoD managers. Because of the dollar magnitude of the programs and the impact on national security, the management of the acquisition programs remains an area needing continued emphasis, oversight, and improvement by DoD managers.

Independent internal audits should be used more extensively as an integral component of management controls by the acquisition program. The limited number of audit reports issued on weapon acquisition issues during the 18-month period covered by this report belies the often-heard assertion that acquisition programs are overaudited. It is particularly telling that only 14 of the 906 ACAT I through III programs (2 percent) were addressed by comprehensive audit reports that reflected evaluation of all significant program aspects.

Appendix A. Evaluation Process

Scope and Methodology. This report summarizes DoD weapon system acquisition program audit coverage from October 1, 1999, to March 31, 2001. During the time period the GAO issued 19 audit reports; the Inspector General, DoD, issued 22 audit reports of which 6 were classified reports; and the Military Department audit agencies issued 17 audit reports. The reports were analyzed to determine systemic weaknesses and the amount of coverage that each acquisition program received. To determine whether a report was an acquisition program report, we read each report and asked the three following questions:

- Did the report focus on ACAT I through IV program acquisition?
- Did the report focus on acquisition issues or focus on systemic logistics, contracting, finance and accounting, or readiness issues?
- Did the report identify the ACAT I through IV program under review?

Use of Computer-Processed Data. We did not use computer-processed data to perform the evaluation.

Dates and Standards. We conducted this evaluation from February through August 2001 in accordance with standards issued and implemented by the Inspector General, DoD.

Contacts. We visited or contacted individuals and organizations within DoD. Further details are available upon request.

Appendix B. Summary of Prior Coverage

During the period of October 1, 1999, to March 31, 2001, the GAO issued 19 audit reports; the Inspector General, DoD, issued 22 audit reports of which 6 were classified; and the Military Department audit agencies released 17 audit reports on the topic of ACAT I through IV acquisition. Issues from the 52 unclassified reports are illustrated in a matrix in Appendix H and titles of the classified reports are listed in Appendix B. These 52 unclassified reports are summarized below and are listed in order with the most recent issuance first.

Unclassified Reports

1. Inspector General, DoD, Report No. D-2001-093, “Acquisition of the Battlefield Combat Identification System,” March 30, 2001. The Army did not have a viable acquisition strategy to acquire the Battlefield Combat Identification System at the completion of the engineering and manufacturing development phase of the acquisition process. In addition, the Battlefield Combat Identification System did not have an up-to-date and comprehensive test and evaluation master plan. Further, the Army lacked funding to test 19 operational requirements and did not plan to operationally test a production prototype of the system in cold, fog, snow, or rain. Without an updated test and evaluation master plan that accurately showed user requirements, testers cannot fully evaluate the effectiveness of the system in reducing fratricide. Also, the milestone decision authority did not have sufficient operational test data to assess the readiness of the system to enter full-rate production. At the time of this summary report, agreement on issues and needed corrective actions were underway.

2. Inspector General, DoD, Report No. D-2001-089, “Management Issues at the Joint Simulation System Program Office,” March 30, 2001. In coordination with the Office of the General Counsel, DoD, the audit reviewed transfers of \$2.1 million in funds and did not identify improprieties. The audit found no indication that the Joint Simulation System Program Office made significant errors in processing obligations. Also, deliverables were adequately recorded. The audit also did not identify any conflicts of interest or improprieties in the hiring practices of the office for contractor or direct-hire personnel. Further, the Joint Simulation System Program Office appropriately reimbursed moving expenses in accordance with the Joint Travel Regulation. Because the concerns raised by the Joint Staff did not warrant further management attention, the report contained no recommendations.

3. Inspector General, DoD, Report No. D-2001-086, “On-Board Jammers for the Integrated Defensive Electronic Countermeasures,” March 20, 2001. The Navy significantly reduced mission reliability from the level recommended in the cost and operational effectiveness analysis. The Navy reduced the requirements so that the AN/ALQ-165 Airborne Self-Protection Jammer could pass the operational test and evaluation and be installed on the F/A-18 E/F aircraft. Furthermore, the AN/ALQ-214, which would be on the on-board jammer for the Blocks II and III of the Integrated Defensive Electronic

Countermeasures Suite, would be tested against the same operational suitability requirements. By reducing the mission reliability rate, the Navy's logistical support requirement may have to be significantly increased to accomplish a 90 percent operational availability rate for the system. At the reduced rate, unscheduled maintenance may be required up to 2.5 times more often than if the system met the mission reliability rate recommended by the cost and operational effectiveness analysis. At the time of this summary report, agreement on issues and needed corrective actions were underway.

4. Naval Audit Service Report No. N2001-0018, "Total Ownership Cost-Reduction Plans," March 20, 2001. Navy Systems Command Program offices provided limited or no documentation showing how cost baselines and cost reduction initiatives were developed. Available documentation supported only a small portion of the assumptions and conclusions used to create the baselines. Various costs were excluded from the cost baselines, and metrics were vague or did not measure desired outcomes. In addition, in some cases, cost reduction initiatives did not relate to program cost drivers, and program offices did not identify specific cost drivers. Navy management recognized that more action was needed regarding the Total Ownership Cost-Reduction Plans initiative and agreed to issue revised policy guidance.

5. GAO Report No. GAO-01-310, "Tactical Aircraft: F-22 Development and Testing Delays Indicate Need for Limit on Low-Rate Production," March 15, 2001. The F-22 program did not meet its schedule goals for 2000, the cost to complete development as now planned may exceed the congressionally established limitation, and the program was not far enough along in flight-testing to confirm DoD estimates of program performance. DoD agreed that F-22 program adjustments are needed to ensure that adequate testing was completed prior to entry into Operational Test and Evaluation.

6. GAO Report No. GAO-01-288, "Best Practices: Better Matching of Needs and Resources Will Lead to Better Weapon System Outcomes," March 8, 2001. A match between developer resources and customer expectations was eventually met on just about every product or program development. A key distinction between successful products and problem products was when the match is achieved. When customer needs and developer resources were matched before a product development started, the more likely the development was to meet cost and schedule objectives. When that match took place later after the product development was underway, problems occurred that took significantly higher investments of time and money. DoD management agreed with the report and agreed with the need to level requirements, resources, and time-lines. The recently revised 5000 process assisted in that process.

7. GAO Report No. GAO-01-6, "Defense Acquisitions: Space-Based Infrared System-low at Risk of Missing Initial Deployment Date," February 28, 2001. The Air Force's acquisition schedule at the time of the audit was at high risk of not delivering the system on time, at cost, or with expected performance. In addition, the program had high technical risks because some critical satellite technologies had been judged to be immature for

the current stage of the program. Also, the DoD acquisition policy and procedures required that assessments be made of the cost and mission effectiveness of space systems to alternative terrestrial land, sea, and air systems. Despite the requirement, DoD had not adequately analyzed or identified cost-effective alternatives to the Space Based Infrared System-low that could satisfy critical missile defense requirements. DoD stated that it was taking action that will address the recommendations.

8. Inspector General, DoD, Report No. D-2001-066, “Acquisition of the Advanced Tank Armament System,” February 28, 2001. The Army did not establish a viable acquisition strategy to develop and acquire the system beyond the program definition and risk reduction phase. Instead, the Milestone Decision Authority considered the Advanced Tank Armament System to be a program element for funding technology demonstrations but did not appropriately manage and fund the system as a technology demonstration. As a result, the Army obligated about \$85.8 million in research, development, test, and evaluation funds through FY 2000 and planned to obligate another \$62.9 million from FY 2001 through FY 2007 for a program that the Army is not intending to fund for the engineering and manufacturing development phase and the production phase. On September 30, 2000, the Army reduced the FY 2001 through FY 2007 funding from about \$42 million to about \$20.9 million for the Advanced Tank Armament System. Beginning in FY 2003, the Army will realign all funding for the Advanced Tank Armament System to other programs.

9. GAO Report No. GAO-01-369R, “Defense Acquisitions: Readiness of the Marine Corps’ V-22 Aircraft for Full-Rate Production,” February 20, 2001. The report discussed the V-22 program readiness for full-rate production. GAO concluded that the V-22 program was not ready for full-rate production. The conclusion was based on two factors. First, the GAO “best practices” work identified practices used by successful commercial and Defense programs to develop and produce quality products in significantly less time and at lower costs. Second, GAO analyzed DoD assessments and data on the V-22 program. The report made no recommendations. However, DoD management stated that V-22 program decisions were deferred to permit consideration of the results of the V-22 Blue Ribbon Panel and of the Inspector General, DoD, investigation into fleet maintenance.

10. Army Audit Agency Report No. AA01-128, “Integrated System Control,” January 29, 2001. Configurations of the Integrated System Control program had valid requirements. However, the Army Training and Doctrine Command needed to update the requirements for Versions 1 and 2 and the Tactical Internet Manager. The Integrated System Control program should have met user needs of the first digitized division. However, because of resource constraints, the material developer faced tremendous challenges and risk in not meeting user needs and fielding schedules of the future digitized battlefield. Also, the Integrated System Control had an adequate strategy for keeping pace through spiral development with modernization efforts of the related systems. By documenting and updating its strategy in operational requirement documents, the Army would make sure it kept pace with modernization efforts. The Army agreed with the recommendations and agreed to take corrective action by providing an updated Operational Requirements Documents.

11. Inspector General, DoD, Report No. D-2001-036, "Acquisition of the Combat Survivor Evader Locator," January 25, 2001. The Program Management Office had planned for and managed design and development of the system despite funding shortfalls. The Air Force had been funding the system through internal Air Force reprogramming below the threshold that required congressional notification. The report expressed concerns regarding how the Program Management Office would fund additional interoperability and security requirements along with associated technological challenges. In addition, the auditors had a concern that the Air Force plan to incrementally purchase its hand-held radio requirements would not take advantage of economic order quantities and would not satisfy a critical mission need in a reasonable timeframe. The auditors concerns were resolved when the Director, Program Analysis and Evaluation, issued a Program Decision Memorandum that reprogrammed additional funds.

12. Inspector General, DoD, Report No. D-2001-032, "Use of Exit Criteria for Major Defense Systems," January 10, 2001. Improvements were needed in establishing exit criteria at milestone decision points and in reporting the status toward attaining exit criteria requirements to milestone decision authorities. For seven of the nine programs reviewed, milestone decision authorities did not ensure that program managers proposed program-specific exit criteria for use at future milestone decision points. In addition, program managers for three of the five major Defense acquisition programs reviewed did not report their status toward attaining exit criteria requirements in the quarterly Defense Acquisition Executive Summary. DoD generally concurred with the report recommendations and agreed to enforce policy that requires the use of exit criteria for major Defense acquisition programs.

13. GAO Report No. GAO-01-228R, "Defense Acquisitions: Status of the KE-ASAT Program," December 5, 2000. This review focused on the DoD Kinetic Energy Anti-Satellite program. GAO found that the program manager and key staff had been reassigned and the program itself had been transferred to a new directorate. Problem areas included funding, limited management and oversight, and poor recordkeeping. In addition, the GAO stated that several internal and financial control breakdowns needed to be further examined and corrected. The Army stated that corrective action would be taken.

14. GAO Report No. GAO-01-74, "Defense Acquisitions: Need to Confirm Requirements for \$4.1 Billion Antiarmor Missile System," December 5, 2000. From 1995 through 1999, the program's production schedule was increased from 9 to 14 years and quantities were reduced from 19,902 to 15,707 submunitions and from 1,806 to 1,206 missiles. During the period, total program costs increased from \$2.1 billion to \$3.1 billion, a 48 percent increase, as a result of schedule increases and quantity reductions as well as poor estimates and technical difficulties. Reductions in submunition and missile procurement quantities combined with increased total program cost resulted in unit procurement cost increases of 80 percent for the submunition and 72 percent for the missile. Further, the DoD 1999 estimates showed that the program would cost almost \$2.6 million to procure 1 missile loaded with 13 submunitions, \$1.1 million more than the 1995 estimate of \$1.5 million.

DoD stated that the submunition and missile program requirements and affordability have been confirmed and will be reviewed again at the full-rate production decision scheduled for FY 2002.

15. Army Audit Agency Report No. AA01-087, “One Semi-Automated Forces,” December 1, 2000. The Army followed proper procedures for obtaining approval for the One Semi-Automated Forces Mission Need Statement. In addition, the Army adequately identified user requirements. However, the requirements needed to be clarified. The acquisition strategy was cost-effective, however, the Army needed to improve the One Semi-Automated Testbed program and include lessons learned in the objective system development. In addition, certain requirements need periodic reviews to determine whether they should continue to be part of the acquisition strategy or should instead be satisfied through some other means. The Army agreed with the recommendations and agreed to expand testing.

16. Inspector General, DoD, Report No. D-2001-012, “Acquisition of the Armored Medical Evacuation Vehicle,” November 22, 2000. The Army did not have a viable acquisition strategy to acquire the Armored Medical Evacuation Vehicle, an ACAT III program, at the completion of the engineering and manufacturing development phase. As a result, the Army had obligated about \$9.7 million in research, development, test, and evaluation funds for the program from its inception. Also, the Army planned to obligate another \$6.3 million to complete the development effort in FY 2001 through FY 2003 for a program that the Army did not intend to fund for production. The Army agreed to discontinue the expenditure of funds against the program.

17. Air Force Audit Agency Report No. 01064010, “Memorandum Report, Airborne Laser Test Program Direct Labor Hour Charges,” November 21, 2000. During FY 1999 and FY 2000, a correlation existed between direct labor hours charged and test activity conducted for the Airborne Laser Advanced Concepts Testbed program. However, for the 4-month period that ended in January 2000, significant increase in labor hours occurred without a corresponding increase in test activity. Also, personnel maintained limited documentation to support their work effort during that period. The Air Force Audit Agency believed that between 400 and 1,100 hours, and the corresponding funds of \$18,000 to \$52,000, should be returned to the customer. The report contained no recommendations because Air Force personnel initiated a preliminary investigation related to the direct labor charges.

18. Army Audit Agency Report No. AA01-023, “Simulation Based Acquisition Program, AMC,” November 8, 2000. Materiel developers needed to improve their planning for the use of modeling and simulation. A review of 10 systems showed that for 9 systems the responsible Program Management Office had not fully planned for the use of modeling and simulation across the life-cycle of the systems. The complexity of developing models and simulations—along with the time needed to obtain funding, collaborate with other activities, and verify and validate models and simulations—resulted in significant lead time requirements, increasing the importance of planning. However, for several programs, the use of modeling and simulation was often focused on specific performance and quality issues rather than to the more systemic and integrated use envisioned by the Simulation

Based Acquisition Program. Better planning and more aggressive cutting edge use of modeling and simulation in system development would allow the Army to reduce system cost, schedule, and development risk. The Army agreed to strengthen the regulatory guidance and policy related to planning for and using modeling and simulation.

19. Air Force Audit Agency Report No. DW001003, "Designated Acquisition Commander Issues - Common Low Observables Verification System, Wright-Patterson Air Force Base," October 11, 2000. Common Low Observables Verification System program personnel worked as an effective team toward achieving program completion. Also, program personnel effectively prevented the growth of requirements while ensuring system performance met user requirements. However, the assessment identified opportunities that would improve key program documents and better address the overall evolutionary acquisition strategy. The Air Force took action during the review to correct the problems identified.

20. GAO Report No. NSIAD-00-197, "Defense Acquisitions: Higher Priority Needed for Army Operating and Support Cost Reduction Efforts," September 29, 2000. For the two developmental systems in the GAO review, the Comanche helicopter and the Crusader Self-Propelled Howitzer, efforts were underway to improve system supportability, reliability, and maintainability. Although those efforts should have had an impact on the systems' operating and support costs, the GAO was unable to link any actions or tradeoffs to specific reductions in operating and support costs. The program managers for the Comanche and the Crusader focused mostly on meeting acquisition cost, schedule, and performance requirements. Further, the Army did not have complete and reliable data on the operating and support costs for systems that were being replaced. As a result, program managers lack the data needed to accurately project operating and support costs and to determine whether they can achieve the DoD goal of reducing new systems' life-cycle costs by 20 to 50 percent over those systems they were replacing. DoD generally agreed with the recommendations and agreed that significant steps remain to be taken to reduce operating and support costs.

21. GAO Report No. NSIAD-00-204, "Unmanned Aerial Vehicles: Questionable Basis for Revisions to Shadow 200 Acquisition Strategy," September 26, 2000. The Army had a questionable basis for revising its acquisition strategy to procure four additional Shadow 200 systems in February 2001 before operational testing is conducted. DoD stated that the risk associated with procuring the additional systems was minimal given the mature technology used in the programs and the extensive developmental and operational tempo testing planned before the procurement decision. The Army did not agree with the recommendation and stated that they should have the option to procure four more Shadow 200 systems before successfully completing operational testing.

22. Air Force Audit Agency Report No. 99064023, "C-17 Integrated Product Team Participation (Phase II)," September 14, 2000. Contract engineering data requirements were effectively managed. That occurred

because engineering data management personnel included appropriate data rights clauses in all of the C-17 contracts for spares procurement and organic depot maintenance support. Legislative changes impacted the flexible sustainment program. Management officials had not fully implemented a single funding source for flexible sustainment, and the contractor had not implemented reliability-based logistics processes or a fully functional sustainment data system. The contractor had not made adequate progress obtaining cost or pricing data to support materials pricing requirements for the FY 2001 through FY 2005 Flexible Sustainment contract. The Air Force and DoD acquisition streamlining initiatives for the extended range acquisition strategy had not significantly reduced the level of Government involvement or achieved the anticipated accelerated acquisition schedule. During the audit, C-17 program personnel satisfactorily addressed the issues discussed in the report.

23. Inspector General, DoD, Report No. D-2000-187, “The Low-Rate Initial Production Decision for the Joint Biological Point Detection System,” September 11, 2000. The Joint Program Manager for Biological Defense and the product manager for Point Detection System implemented an evolutionary acquisition strategy for developing the Point Detection System and were working diligently to meet an aggressive schedule for developing and fielding the Point Detection System. However, Military Department independent test agencies, in draft operational assessments, concluded that the Block I Point Detection System was not ready to enter into low-rate initial production as planned in September 2000. In draft assessments, the independent agencies concluded that the Point Detection System was not yet operationally effective, suitable, or survivable and needed design changes. Further, the milestone decision authority for the planned low-rate initial decision was below the appropriate organizational level based on program expenditures. DoD initiated corrective action by raising the milestone decision authority and changing the acquisition strategy.

24. GAO Report No. NSIAD-00-165, “Defense Acquisitions: Air Force Operating and Support Cost Reductions Need Higher Priority,” August 29, 2000. Air Force operating and support costs were growing at about 4 percent per year, even though the total number of aircraft, the number of hours they are flown, and the number of personnel who fly and maintain them had been declining for years. Also, while the estimated operating and support costs of the Joint Primary Aircraft Training System were much lower than the aircraft it replaced, the costs of the F-22 and the Joint Strike Fighter could be higher than the aircraft they were expected to replace. The Air Force did not give operating and support cost management the same high priority it assigns to other program concerns such as weapon performance during system development or improved combat capability after fielding. Instead of establishing an operating and support cost requirement and managing to meet it, new programs focused on initiatives to improve reliability, supportability, and maintainability. DoD agreed that significant steps remain to be taken to reduce operating and support costs.

25. Naval Audit Service Report No. N2000-0040, “Predator Short Range Assault Weapon: Acquisition Planning and Contractor Merger,” August 29, 2000. The Predator program overstated training requirements and the Marine Corps had not explored potentially more affordable alternatives to the weapon

despite significant cost growth and schedule breaches. The audit determined that savings to the Predator program resulted from overhead rate reductions. The audit assessment on the impact of personnel turnover to the Predator program was somewhat inconclusive. The assessment was inconclusive because the program office did not provide evidence to support its contention that adverse effects were due to the turnover and because Lockheed Martin, the Defense Contract Management Agency, and the Defense Contract Audit Agency believed that sufficient controls were in place to mitigate the effects of the turnover. The Navy agreed to establish exit criteria and reduce the training requirement.

26. GAO Report No. NSIAD-00-178, “Defense Acquisitions: Recent F-22 Production Cost Estimates Exceeded Congressional Limitation,” August 15, 2000. About one-half of the \$21 billion in cost reductions identified by the F-22 contractors and program office were not implemented. However, the Air Force may not be able to achieve expected results from some of the plans because they were beyond the Air Force’s ability to control. Although the Air Force and its contractors had procedures that tracked the status of the production cost reduction plans and the Air Force had reported quarterly to the Under Secretary of Defense for Acquisition, Technology, and Logistics concerning the total estimated cost of F-22 production, the reports had not regularly included a summary of status of production cost reduction plans. Also, both the Office of Secretary of Defense and Air Force cost estimators projected F-22 production costs that exceeded the congressional cost limitation of \$39.8 billion. The Air Force stated that once the Quadrennial Defense Review was completed, DoD would update the annual Selected Acquisition Report and would make adjustments to quantities, if needed, to conform to the congressional cap.

27. Inspector General, DoD, Report No. D-2000-174, “V-22 Osprey Joint Advanced Vertical Aircraft,” August 15, 2000. The V-22 would not successfully complete the key operational test and evaluation objectives required to be accomplished before a Milestone III full-rate production decision. That occurred because 22 deficiencies in major operational effectiveness and suitability requirements had not been corrected and would not be tested in time for the Milestone III review in December 2000. In addition, adequate funding was not available to provide logistical support for the existing V-22. Unless the Program Management Office could demonstrate that those issues were being effectively addressed, the Milestone Decision Authority could not be reasonably assured that the V-22 met its operational requirements and would be able to perform the full range of missions required by the Joint Operational Requirements Document. The Navy agreed to prepare a detailed plan to identify how and when the waived operational requirements would be funded, corrected, and tested before the Milestone Decision III review.

28. Army Audit Agency Report No. AA00-341, “High Level Architecture,” August 14, 2000. Actions taken by activities for making sure all of the 24 simulations reviewed would be compliant with high-level architecture were inadequate. At the time of the review, 10 of 24 simulations were not adequately progressing. For one simulation, Close Combat Tactical Trainer, the Army would incur an additional \$153.2 million in funding if the trainer were retired at

the end of FY 2000 as required by current DoD policy. Other simulations existed of which the Army Model and Simulation Office was not aware and could not track their progress. For other simulations, activities did not provide the office with current and useful information for tracking the progress and/or compliance with high level architecture. The Army took corrective action by conducting a complete review of the model and simulation resource repository.

29. GAO Report No. NSIAD-00-182, “Defense Acquisitions: Howitzer Program Experiencing Cost Increases and Schedule Delays,” July 28, 2000.

The program had experienced several schedule delays, and schedules current at the time of the review may not provide the DoD with sufficient information by March 2002 to make an informed decision to begin full-rate production. In addition, cost growth in the program prime development contract had been significant. Several design changes had been made to the lightweight Howitzer, however, testing of the modified weapon would be delayed by the late delivery of the Howitzers to the program. The effect of production by a foreign contractor on the Marine Corps and the Army’s ability to support the Howitzer could not be assessed until the contractor determined where production models would be built. The report made no recommendations.

30. Inspector General, DoD, Report No. D-2000-163, “Ground Control Approach-2000 Radar System Test Plan and Test Results,” July 20, 2000.

The Air Force test planning for the Ground Control Approach-2000 radar system was incomplete and needed improvement. As a result, the extent to which controllers could meet the multiple target requirements with the Ground Control Approach-2000 radar was unknown. Also, tests of the radar system showed significant deficiencies in the Airport Surveillance Radar function. As a result, the October 1998 delivery justification requirement for the radar system was not met. At the time of the report, the radar system had passed the Federal Aviation Administration flight check. The Air Force agreed to additional tests that meet the intent of the recommendation.

31. GAO Report No. NSIAD-00-153, “Missile Defense: Cost Increases Call for Analysis of How Many New Patriot Missiles to Buy,” June 29, 2000.

Estimated costs of the Patriot program increased from about \$3.9 billion in 1994 to about \$6.9 billion in March 2000. At the same time, the number of missiles to be procured decreased from 1,200 to 1,012. Missile development costs accounted for about \$775 million of the increase and procurement costs accounted for about \$2.2 billion. A primary reason for development cost increase was that the original estimate did not recognize the level of effort and difficulty associated with developing and producing a hit-to-kill missile compared with previous missiles. Costs were likely to increase further. The DoD had begun to implement a number of program changes to control costs, and other changes were being studied. In addition, a gap existed between the Army’s stated requirements of 2,200 missiles and the planned missile procurement of 1,012. DoD concurred with the report and stated that the current budget process meets the intent of the recommendation.

32. Naval Audit Service Report No. N2000-0027, “Independent Logistics Assessments Polices,” June 27, 2000. Program Executive Offices and Systems Commands were not always compliant with the policy requirement to perform Independent Logistic Assessments. When they were completed they were

mostly compliant. The audit determined that the Independent Logistic Assessment process was not effectively implemented. Program Executive Offices and System Commands did not perform a significant number of assessments and did not always disclose results or the basis of logistics certifications to decision authorities. Procedures to implement the process were not formalized, validated, or complete. Without timely and quality Independent Logistics Assessments results and/or knowing the basis of logistics certifications, decision authorities could not make fully informed decisions. Ineffective implementation represented a material management control weakness. The Navy agreed to revise applicable policy documents.

33. Air Force Audit Agency Report No. DD000010, “Selected Aspects of the Temporary 2 Modification Program Air Force Flight Test Center, Edwards AFB CA,” June 15, 2000. The Configuration Control board Chairperson could improve Temporary 2 Modification program demodification plans. A review of 30 plans indicated that 6 of the plans did not contain documentation estimating demodification cost and anticipated demodification date. In addition, nine of the plans had anticipated demodification dates that were out of date. Those conditions occurred because the Technical Directorate, Instrumentation Chief, did not periodically review demodification plans. The Air Force action taken or planned to be taken would correct the problems identified in the report.

34. Inspector General, DoD, Report No. D-2000-149, “Use of an Open Systems Approach for Weapon Systems,” June 14, 2000. The Joint Task Force had worked diligently to implement the open systems approach for DoD acquisition programs. However, the Joint Task Force needed increased assistance from the Defense and Component acquisition executives, as well as program managers, to implement the use of an open systems approach in the systems acquisition process. Of the 17 major Defense acquisition programs that gained approval to begin program definition and risk reduction or to enter engineering and manufacturing development between March 1996 and July 1999, 14 programs proceeded into the next acquisition phase without program managers clearly defining open system design objectives or strategy for achieving the objectives. In addition, detailed documentation reviews for 4 of the 17 major Defense acquisition program offices showed that 3 of the 4 programs did not document a means for determining the extent of design openness of systems, subsystems, and components. Also, DoD guidance on open systems did not require program managers to assess the impact of a given level of design openness on the long-term viability and affordability of systems. DoD generally agreed to implement corrective actions.

35. GAO Report No. NSIAD-00-158, “Defense Acquisitions: F/A-18E/F Aircraft Does Not Meet All Criteria for Multiyear Procurement,” May 26, 2000. Although the F/A-18E/F met its key performance parameters, such as range and carrier suitability, the operational tester comparisons of the F/A-18E/F to the existing F/A-18C showed that the F/A-18E/F does not demonstrate superior operational performance over the existing aircraft. Deficiencies identified by the operational testers would be costly to correct and raise questions about whether the Navy should enter into a multiyear

procurement contract for full-rate production of the aircraft. The major deficiency was the aircraft's weak aerodynamic performance, which reduced the aircraft's ability to accelerate, climb and turn, and caused it to have a low top speed. The F/A-18E/F also had a noise and vibration deficiency that damaged the air-to-air and some air-to-ground weapons carried by the aircraft. DoD disagreed with the recommendation and stated that none of the conclusions of the expert panel that was monitoring the noise and vibration problem suggested that a wing redesign was necessary and the program met the stability of design criterion for multiyear procurement.

36. Air Force Audit Agency Report No. DH000015, "Award Fee Contract Management Electronic Systems Center Hanscom AFB MA," May 24, 2000. The audit reviewed award fee procedures in the Global Theater Weather Analysis and Prediction System and the Deliberate and Crisis Action Planning and Execution Segments programs. The review focused on fixed-price and cost-reimbursement contracts that contained award fee provisions. Overall, award fee contracts were effectively managed except for two timeliness issues. The Air Force took corrective action by directing program managers to certify and administratively reserve program funds as soon as possible prior to each award fee period.

37. GAO Report No. NSIAD-00-74, "Joint Strike Fighter Acquisition: Development Schedule Should be Changed to Reduce Risks," May 9, 2000. The Joint Strike Fighter program office implementation of its acquisition strategy would not ensure that the program would enter the engineering and manufacturing phase development phase with low technical risk. Aircraft being produced during the concept demonstration phase were not intended to demonstrate many of the technologies considered critical for achieving Joint Strike Fighter program cost and performance requirements. Instead, many of these technologies, such as avionics, flight systems, manufacturing and producibility, propulsion, supportability, and weapon delivery system, would be demonstrated only in laboratory or ground testing environments. DoD did not agree with the report and said that the report was based on a misinterpretation of the use of technology readiness levels to determine the readiness of the critical technologies to enter engineering and manufacturing development.

38. Inspector General, DoD, Report No. D-2000-121, "Hazardous Material Management for Major Defense Systems," May 4, 2000. The program offices for the nine programs reviewed generally planned and provided for reduction and elimination of hazardous material in their programs. However, improvement was needed in developing a programmatic environmental, safety, and health evaluation; estimating the environmental costs for demilitarization, disposal, and cleanup of the system; processing an analysis of the potential environmental consequences of developing and deploying the system; and establishing a hazardous material reutilization and inventory management program. Generally, the hazardous material management policy was adequate in that the conditions noted were not policy related but the result of program offices not fully implementing the policy. The report did not contain recommendations.

39. GAO Report No. NSIAD-00-75, “Defense Acquisitions: Need to Revise Acquisition Strategy to Reduce Risk for Joint Air-to-Surface Standoff Missile,” April 26, 2000. The development schedule had lengthened from 56 months to 78 months, and the total program costs have increased from \$1.6 billion to \$2.1 billion. In the most recent extension, the Air Force added 10 months to the development schedule and increased estimated program costs by \$90.1 million. The Air Force employed acquisition reform strategies, such as using technologies already proven in other systems and establishing a cost goal as an independent requirement. As a result, the current 78-month development program time frame was substantially less than the historical average of 118 months for other missile programs. Also, the missile’s production unit cost was projected to be well under the price limit. However, the program was still vulnerable to significant cost increases and schedule delays. DoD generally agreed with the recommendations in the report and stated that the current acquisition strategy met the GAO objective of closely linking the production decision to the knowledge points the GAO report references.

40. GAO Report No. NSAID-00-78, “Unmanned Aerial Vehicles: Progress of the Global Hawk Advanced Concept Technology Demonstration,” April 25, 2000. The Global Hawk had made progress in terms of achieving performance objectives, but had not made progress toward the price goal. The most recent projection in July 1999 from the contractor was an average unit flyaway price of \$15.3 million in FY 1994 dollars. To date, the Global Hawk had demonstrated basic flying capabilities but had not yet undergone sufficient testing to determine whether it could successfully conduct reconnaissance missions on a regular basis. DoD delayed a formal decision on whether to acquire Global Hawk until September 2000 after the technology demonstration, including the user demonstration and assessment, was complete. According to GAO, the decision to wait was prudent because by September 2000, a number of important unknowns would be addressed.

41. Air Force Audit Agency Report No. 99064028, “Sensor Fuzed Weapon Pre-Planned Product Improvement,” April 10, 2000. Management visibility could have been improved by increasing the level of cost reporting detail, establishing improved analytical capabilities to assess contractor performance, and improving the timeliness of earned value data submissions. Improved contract performance visibility could provide more detailed and timely identification of cost and schedule impact from technical performance issues and facilitate earlier implementation of alternative technical approaches, mitigating actions, recovery plans, and resource reallocations. Program officials initiated actions during the audit to address the issues and improvement opportunities identified.

42. Air Force Audit Agency Report No. 97064003, “F-22 Life-Cycle Planning During Engineering and Manufacturing Development,” April 10, 2000. Environmental management integration program personnel took proactive measures to identify and eliminate hazardous materials from the F-22 weapon system design and to incorporate environmental lessons learned from other major acquisition programs. Program personnel could have more timely

updated the programmatic environmental, safety, and health evaluation plan and accelerated the production environmental assessment. Software development program officials could improve insight into the contractor's overall software development and integration approaches by updating the software development plan. Program personnel could augment current life-cycle planning by including system storage and disposal requirements in program planning documentation and the draft life-cycle cost estimate. Because F-22 personnel initiated corrective action during the audit to address the issues identified in the report, the report contained no recommendations.

43. GAO Report No. NSIAD-00-68, "F-22 Aircraft: Development Cost Goal Achievable If Major Problems Are Avoided," March 14, 2000. The Air Force made progress in demonstrating the expected performance of the F-22. The Air Force continued to estimate that by the end of the development program, the F-22 would meet or exceed its performance goals. Although the development program made progress in achieving schedule goals in 1999, some tests and scheduled activities established in 1997 were delayed because of continuing problems such as delays in delivery of flight test aircraft and completion of testing of nonflying ground test aircraft. However, the Air Force had not extended the August 2003 completion date of the development program and, therefore, may not be able to complete development flight tests before the development program was scheduled to end. Further, the schedule of avionics development appears optimistic. Despite \$757 million in potential cost increases, the F-22 program could still be managed within its cost limitation because the Air Force and contractors have identified \$860 million in potential cost offsets. DoD agreed with the report.

44. Inspector General, DoD, Report No. D-2000-092, "Acquisition of the Minuteman III Propulsion Replacement Program," March 1, 2000. Overall, the System Program Office successfully developed and readied the program for low-rate initial production within established cost, schedule, and performance baselines. However, three conditions warranted additional management attention before the program entered full-rate production. The System Program Office did not ensure that analyses of the potential environmental consequences of developing and deploying the Propulsion Replacement Program were performed and approved as required. The System Program Office did not complete its programmatic environmental, safety, and health evaluation. Also, the System Program Office did not plan to develop a comprehensive total ownership life-cycle cost estimate for the Propulsion Replacement Program. Moreover, the System Program Office did not have a baseline to measure future mandated reductions in program life-cycle costs. The Air Force agreed to take corrective action by developing a total life-cycle cost estimate before the full rate production decision.

45. Naval Audit Service Report No. N2000-0015, "Auditor General Advisory-Program Executive Office Auditor Project," January 25, 2000. The primary goal of the Program Executive Office auditor project was to deliver timely products and services to the Program Executive Office and program managers that will facilitate effective decisionmaking. The auditors assisted the various Program Executive Offices with the management functions and financial and management information systems. The auditors also served as liaison for external audits, as integrated product team members, followed up on audit

findings, and helped the Program Executive Office with various assignments. The Naval Audit Service assigned full-time auditors to six Program Executive Offices and two acquisition commands. Because the report only discussed the accomplishments of the Program Executive Office Auditor project, the report contained no recommendations.

46. Inspector General, DoD, Report No. D-2000-070, “Evolved Expendable Launch Vehicle Program Other Transactions,” December 30, 1999. The Air Force use of other transaction authority for the program was appropriate. However, the agreements provided limited insight into the financial aspects of the program. As a result, the Government was unable to monitor program costs. Also, other transaction reports to congressional and DoD officials did not fully disclose the costs to the Government for the development effort. The System Program Office implemented inappropriate protective measures to safeguard unclassified, competition sensitive, and proprietary contractor information. Those enhanced protective measures unnecessarily restricted the access of Government organizations that required access to contractor information to perform their assigned duties. The System Program Office also planned to not use onsite Defense Contract Audit Agency auditors. The Air Force initiated actions to implement the recommendations.

47. GAO Report No. NSIAD-00-28, “Battlefield Automation: Army’s Restructured Land Warrior Program Needs More Oversight,” December 15, 1999. The Land Warrior System could not be fielded by September 2000 because Land Warrior technologies could not be developed in time. In addition, oversight of the program was not sufficient based on its projected development costs. At present, Land Warrior would not operate with a key digitized battlefield system, Force XXI Battle Command Brigade and Below. Finally, the program had not resolved technical and human factor problems that may render the system ineffective. DoD partially concurred with the report and agreed that the prototypes must be fully tested with soldiers in field environments.

48. Air Force Audit Agency Report No. 98064003, “Airborne Laser Program Integrated Product Team Participation,” December 8, 1999. Airborne Laser program officials effectively managed transition from a technology-oriented effort to a Major Defense Acquisition Program status. Program personnel proactively embraced streamlined acquisition principles and implemented integrated product and process development concepts. However, opportunities existed to further enhance initial planning efforts and streamline internal management processes and facilitate Year 2000 compliance efforts for program software and related interfaces. Officials could define a critical path for basing decisions and formally designate the Air Mobility Command as a deployment-planning participant. Also, opportunities existed to refine internal processes and enhance attainment of DoD acquisition streamlining goals. Specifically, the program could benefit from improved documentation of key work processes and increased emphasis on paperless acquisition alternatives. The Air Force initiated corrective action during the audit for the issues identified.

49. Army Audit Agency Report No. AA00-016, “Tank Training Devices for National Guard Units,” November 1, 1999. The Army needed to decide which gunnery device will be the primary training device for the National Guard. The Army found that the upgraded Abrams Full Crew Trainer should provide training effectiveness that is the same as or superior to that provided by the upgraded Conduct of Fire Trainer. The Army also concluded that, over a 15-year period, each upgraded Abrams Full Crew Trainer would result in a significant cost avoidance for each trainer because it would cost about one-half as much as each upgraded Conduct of Fire Trainer. In addition, the Army concluded that if the Abrams Full Crew Trainer is successfully upgraded, the National Guard could phase out all of the M1 Conduct of Fire Trainers not scheduled for upgrade, resulting in a cost avoidance of about \$5.3 million. Additionally, in response to the Army recommendation, the National Guard analyzed its quantitative requirement for the Abrams Full Crew Trainer and reduced that requirement from 262 to 172. The reduction will result in about \$18.7 million in cost avoidance. The Army concurred with the report recommendations.

50. GAO Report No. NSIAD-00-15, “Defense Acquisitions: Army Purchased Truck Trailers That Cannot Be Used as Planned,” October 27, 1999. The Army paid a much higher unit price for the trailers because it awarded a multiyear, 5-year contract that required the Army to fully fund each year by a specific date or cancel the remaining production years. Also, the Army decided not to fund the fourth year of the contract and rather than cancel the contract, the Army restructured the contract, which resulted in higher unit prices. The GAO also found that most of the 6,700 High Mobility Trailers purchased are not usable because of a safety problem and not suitable because they damage the trucks towing them. In addition, the Army will pay an additional \$640 per trailer for required trailer modifications but has not determined the modification needed to correct the trailer’s brakes. The Army will also pay \$250 per heavy truck for a modification, but has not determined the required modification for the light truck. Because the Army has not determined all the required modifications the total unit cost to the Army for the trailers is unknown. Finally, the GAO found that the Army’s acquisition strategy underestimated risks. The Army concurred with the recommendation and agreed that before proceeding with follow-on procurement of the trailer, the Army would perform testing to demonstrate that the trailer design meets operational requirements and will not damage the truck towing it.

51. Inspector General, DoD, Report No. 00-022, “Hazardous Material Management for the *Nimitz*-Class Nuclear Aircraft Carrier Program,” October 27, 1999. The program office had not developed a total life-cycle cost estimate to establish its total ownership cost objective and threshold to include environmental costs for demilitarization, disposal, and associated cleanup of the *Nimitz*-Class carriers at the end of their useful life and for applicable ship alterations and overhauls. Also, the program office had not developed a programmatic environmental, safety, and health evaluation that included a strategy for meeting environmental, safety, and health requirements; identified demilitarization and disposal requirements; established program environmental responsibilities; and identified a methodology to track progress throughout the acquisition life-cycle of the program to include ship alterations and overhauls. Without the evaluation, the program office cannot ensure that it is aware of the

impact of environmental, safety, and health issues on mission and cost and may also be forgoing opportunities to further reduce environmental life-cycle costs over the life span of the program. The Navy concurred with the recommendations.

52. Inspector General, DoD, Report No. 00-012, “Hazardous Material Management for the F-15 Aircraft Program,” October 15, 1999. The F-15 System Program Office did not include environmental costs for demilitarization, disposal, and associated cleanup of the F-15 aircraft at the end of useful life in the F-15 life-cycle cost estimate. As a result, the F-15 System Program Office understated the total life-cycle costs and would not be able to accurately report the liability for demilitarization, disposal, and environmental cleanup costs when DoD guidance for reporting those costs in financial statements becomes available. In addition, the F-15 System Program Office did not include program environmental responsibilities and a methodology to track and document completion of its environmental strategy throughout the system acquisition life-cycle in its programmatic environmental, safety, and health evaluation. Without an evaluation that includes program environmental strategy, the program office cannot ensure that it is aware of the impact of environmental, safety, and health issues on mission and cost and may also be forgoing opportunities to further reduce environmental life-cycle costs over the life span of the F-15 program. The Air Force concurred with the findings and recommendations.

Classified Reports

The Inspector General, DoD, issued six classified reports regarding ACAT I through IV acquisition. The reports addressed protection of programs against radio frequency weapons.

- Inspector General, DoD, Report No. D-2000-152, “Protection of the Global Positioning System Against Radio Frequency Weapons (U),” June 19, 2000
- Inspector General, DoD, Report No. D-2000-135, “Protection of the M1A2 Tank 2000 Against Radio Frequency Weapons (U),” May 31, 2000
- Inspector General, DoD, Report No. D-2000-115, “Protection of the V-22 Osprey Against Radio Frequency Weapons (U),” April 24, 2000
- Inspector General, DoD, Report No. D-2000-073, “Protection of the Sensor Fuzed Weapon Against Radio Frequency Weapons (U),” February 2, 2000
- Inspector General, DoD, Report No. D-2000-067, “Protection of the Joint Direct Attack Munition Against Radio Frequency Weapons (U),” December 27, 1999

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- Inspector General, DoD, Report No. D-2000-024, “Protection of the Sense and Destroy Armor Submunition Against Radio Frequency Weapons (U),” October 28, 1999

Appendix C. Elements of a Program Management Review

The Inspector General, DoD, implemented a standard approach to performing audits of acquisition programs. That approach is known as the Program Management Element approach. We identified 44 major elements that can be reviewed during a Program Management Element audit. The 44 elements can be grouped into 3 major categories—program definition, program structure, and program design.

Program Definition. The purpose of program definition is to translate broadly stated mission needs into operational requirements, from which specific performance specifications are derived. The following elements are included in the program definition category.

- Intelligence Support
- Requirements Evolution
- Analysis of Alternatives
- Affordability
- Supportability

Program Structure. Program structure identifies management elements necessary to structure a sound, successful program. The elements address what the program will achieve, how the program will be developed and/or procured, how the program will be evaluated against what was intended, and what resources will be needed for the program. The following elements are included in the program structure category.

- Program Goals
- Acquisition Strategy
- Commercial and Developmental Items
- Risk Management
- Contracting
- Contract Management
- Joint and Reciprocal Programs
- Life-Cycle Support
- Life-Cycle Resource Estimates
- Warranties
- Test and Evaluation

Program Design. The purpose of program design is to establish the basis for a comprehensive, structured, integrated, and disciplined approach to the life-cycle design of major weapons. The following elements are included in the program design category.

- Integrated Product and Process Development
- Systems Engineering
- Manufacturing and Production
- Quality
- Acquisition Logistics
- Life-Cycle Cost
- Integrated Logistics Support
- Maintenance Plan and Implementation
- Deployment
- Environmental, Safety and Health
- Hazardous Materials
- Demilitarization and Disposal
- Pollution Prevention
- Open System Design
- Software Engineering
- Year 2000 Issue
- Reliability, Availability, and Maintenance
- Human Systems Integration
- Interoperability
- Survivability
- Work Breakdown System
- Contractor Performance
- Standardization Documentation
- Metric System
- Program Protection
- Electromagnetic Environmental Effects
- Program Management
- Implementing Acquisition Reform

Appendix D. ACAT I Programs Reviewed

Acquisition Program	Report No. ¹	Program Definition Elements	Program Structure Elements	Program Design Elements	Other Areas Reviewed
Abrams Tank Upgrade	D-2000-135 (C)				Radio Frequency Weapons
Advanced Extremely High Frequency Program	D-2001-032 (12)		Program Goals		
AIM-9X Air-to-Air Missile Upgrade	D-2000-149 (34)			Open Systems	
Airborne Laser	D-2000-149 (34)			Open Systems	
	01064010 (17)		Contract Management		
	98064003 (48)	Affordability	Program Goals	1) Environmental, Safety, and Health 2) Program Management	Integrated Product Team Participation
Amphibious Assault Ship	N2001-0018 (4)			Life-cycle Cost	
Army Tactical Missile Program Brilliant Antiarmor	GAO-01-74 (14)	1) Affordability 2) Requirements			
	GAO-01-288 (6)	Requirements			
B-1 Mission Upgrade	D-2000-149 (34)			Open Systems	
Black Hawk Helicopter	D-2000-121 (38)			Hazardous Materials	
	AA01-023 (18)		Test and Evaluation		
C-17A Advanced Cargo Aircraft	99064023 (22)	Affordability	1) Acquisition Strategy 2) Contract Management	Systems Engineering	Integrated Product Team Participation
CH-60S Utility Helicopter	D-2000-149 (34)			Open Systems	
Comanche Helicopter	D-2000-121 (38)			Hazardous Materials	
	NSIAD-00-197 (20)			Life-Cycle Cost	
	GAO-01-288 (6)	Requirements			
Crusader Artillery System	NSIAD-00-197 (20)			Life-Cycle Cost	
	GAO-01-288 (6)	Requirements			
DD-21 Destroyer Program	N2000-0027 (32)			Acquisition Logistics	
	N2001-0018 (4)			Life-Cycle Cost	
DDG-51 Guided Missile Destroyer	N2001-0018 (4)			Life-Cycle Cost	
Global Broadcast Service	D-2000-149 (34)			Open Systems	

¹ Number in parentheses indicates location of report in Appendix B and a (C) indicates report is classified.

Acquisition Program	Report No.	Program Definition Elements	Program Structure Elements	Program Design Elements	Other Areas Reviewed
Global Positioning System	D-2000-152 (C)				Radio Frequency Weapons
Ground Control Approach 2000 Radar System	D-2000-163 (30)		Test and Evaluation		
Evolved Expendable Launch Vehicle	D-2000-070 (46)				Other Transactions
F/A-18E/F Naval Strike Fighter	NSIAD-00-158 (35)	Affordability	Test and Evaluation		
F-22 Aircraft	97064003 (42)		Life-Cycle Resource Estimates	Hazardous Materials	Integrated Product Team Participation
	NSIAD-00-68 (43)	Affordability	Test and Evaluation		
	NSIAD-00-165 (24)			Life-Cycle Cost	
	NSAID-00-178 (26)	Affordability			
	GAO-01-310 (5)	Affordability	1) Program Goals 2) Test and Evaluation	1) Contractor Performance 2) Manufacturing and Production	
Family of Medium Tactical Vehicles	AA01-023 (18)		Test and Evaluation		
Improved Cargo Helicopter	D-2000-149 (34)			Open Systems	
Joint Air-to-Surface Standoff Missile	D-2000-149 (34)			Open Systems	
	NSIAD-00-75 (39)	Affordability	Acquisition Strategy		
Joint Direct Attack Munition	D-2000-067 (C)				Radio Frequency Weapons
Joint Primary Aircraft Trainer	NSIAD-00-165 (24)			Life-Cycle Cost	
Joint Simulation System	D-2001-089 (2)				Management concerns relating to program office
Joint Strike Fighter	D-2000-149 (34)			Open Systems	
	NSIAD-00-74 (37)	1) Affordability 2) Requirements	1) Acquisition Strategy 2) Test and Evaluation		
	NSIAD-00-165 (24)			Life-Cycle Cost	
Longbow Apache Helicopter	AA01-023 (18)		Test and Evaluation		
Multi-Functional Information	D-2001-032 (12)		Program Goals		
	N2001-0018 (4)			Life-Cycle Cost	
Minuteman III Guidance Replacement Program	D-2000-121 (38)			Hazardous Materials	

Acquisition Program	Report No.	Program Definition Elements	Program Structure Elements	Program Design Elements	Other Areas Reviewed
Minuteman III Propulsion Replacement Program	D-2000-092 (44)	Requirements	1) Acquisition Strategy 2) Contract Management 3) Risk Management 4) Test and Evaluation	1) Acquisition Logistics 2) Earned Value Management 3) Environmental, Safety and Health 4) Hazardous Materials 5) Life-Cycle Cost	
	D-2000-121 (38)			Hazardous Materials	
Multiple Launch Rocket System	D-2000-149 (34)			Open Systems	
	D-2001-032 (12)		Program Goals		
National Air Space System	D-2001-032 (12)		Program Goals		
National Missile Defense	D-2000-149 (34)			Open Systems	
National Polar Orbiting Operational Environment Satellite System	D-2000-149 (34)			Open Systems	
Navy Area Theater Ballistic Missile Defense	D-2000-149 (34)			Open Systems	
Navy Extremely High Frequency Satellite Communications Program	N2001-0018 (4)			Life-Cycle Cost	
Navy Theater Ballistic Missile Defense	D-2000-149 (34)			Open Systems	
Nimitz-Class Nuclear Aircraft Carriers	00-022 (51)			Hazardous Materials	
	D-2000-121 (38)			Hazardous Materials	
	N2001-0018 (4)			Life-Cycle Cost	
Patriot PAC-3	NSIAD-00-153 (31)	1) Affordability 2) Requirements			
Seawolf Combat Systems	N2001-0018 (4)			Life-Cycle Cost	
Sense and Destroy Armor Submunition	D-2000-024 (C)				Radio Frequency Weapons
Space Based Infrared System-High	D-2000-149 (34)			Open Systems	
Spaced Based Infrared System-Low	D-2000-149 (34)			Open Systems	
	GAO-01-6 (7)	Analysis of Alternatives	Program Goals		

Acquisition Program	Report No.	Program Definition Elements	Program Structure Elements	Program Design Elements	Other Areas Reviewed
Surface to Air Missiles (Block III/IIIA)	N2001-0018 (4)			Life-Cycle Cost	
Surface to Air Missiles (Block IV)	N2001-0018 (4)			Life-Cycle Cost	
T-45 Undergraduate Jet Pilot Training System	D-2000-121 (38)			Hazardous Materials	
Tactical Tomahawk	D-2000-149 (34)			Open Systems	
U.S. Marine Corps Helicopter Upgrades	D-2000-149 (34)			Open Systems	
	N2001-0018 (4)			Life-Cycle Cost	
V-22 Osprey Joint Advanced Tactical Aircraft	D-2000-174 (27)	Requirements	1) Acquisition Strategy 2) Test and Evaluation 3) Risk Management	1) Acquisition Logistics 2) Manufacturing and Production 3) Life-Cycle Cost	Integrated Product Teams
	D-2000-115 (C)				Radio Frequency Weapons
	N2001-0018 (4)			Life-Cycle Cost	
	GAO-01-369R (9)		Test and Evaluation		
Virginia-Class Submarine	D2001-032 (12)		Program Goals		
	N2001-0018 (4)			Life-Cycle Cost	

Appendix E. ACAT II Programs Reviewed

Acquisition Program	Report No. ²	Program Definition Elements	Program Structure Elements	Program Design Elements	Other Areas Reviewed
Advanced Integrated Electronic Warfare System	N2001-0018 (4)			Life-Cycle Cost	
Advanced Mission Computer and Displays	N2000-0027 (32)			Acquisition Logistics	
	N2001-0018 (4)			Life-Cycle Cost	
All Source Analysis System	D-2001-032 (12)		Program Goals	-	
AN/ALQ-165 and AN/ALQ-214 On-Board Jammers	D-2001-086 (3)	Requirements	Test and Evaluation		
	GAO-01-288 (6)	Requirements			
Battlefield Combat Identification System	D-2001-093 (1)	Requirements	1) Acquisition Strategy 2) Test and Evaluation		
C/KC-135 Stratotank Aircraft	D-2000-121 (38)			Hazardous Materials	
Consolidated Automated Support System	N2001-0018 (4)			Life-Cycle Cost	
Extended Range Guided Munitions	D-2001-032 (12)		Program Goals		
F-15 Aircraft	00-012 (52)			Hazardous Materials	
	D-2000-121 (38)			Hazardous Materials	
Grizzly Mine Clearing System	D-2000-121 (38)			Hazardous Materials	
	AA01-023 (18)		Test and Evaluation		
Joint Tactical Combat Training System	N2001-018 (4)			Life-Cycle Cost	
Land Warrior Program	NSIAD-00-28 (47)		1) Acquisition Strategy 2) Program Goals 3) Test and Evaluation	1) Interoperability 2) Program Management	
Lightweight 155mm Towed Howitzer	N2001-0018 (4)			Life-Cycle Cost	
	NSIAD-00-182 (29)	Affordability	Test and Evaluation		
P-3 Improvement Program	N2001-0018 (4)			Life-Cycle Cost	
P-3 Sustained Readiness Program	N2001-0018 (4)			Life-Cycle Cost	
Remote Minehunting System	N2001-0018 (4)			Life-Cycle Cost	
Rolling Airframe Missile Block I	N2000-0027 (32)			Acquisition Logistics	

² Number in parentheses indicates location of report in Appendix B and a (C) indicated report is classified.

Acquisition Program	Report No.	Program Definition Elements	Program Structure Elements	Program Design Elements	Other Areas Reviewed
Sensor Fuzed Weapon	99064028 (41)	Affordability	Program Goals		
	D-2000-073 (C)				Radio Frequency Weapons
Wide Area Munitions	D-2001-032 (12)		Program Goals		
Wind Corrected Munitions Dispenser	D-2001-032 (12)		Program Goals		

Appendix F. ACAT III Programs Reviewed

Acquisition Program	Report No. ³	Program Definition Elements	Program Structure Elements	Program Design Elements	Other Areas Reviewed
Advanced Tank Armament System	D-2001-066 (8)	Requirements	1) Acquisition Strategy 2) Test and Evaluation		
Agile Ground Laser Eye Protection System	N2001-0018 (4)			Life-Cycle Cost	
Armored Medical Evacuation Vehicle	D-2001-012 (16)	Requirements	1) Acquisition Strategy 2) Test and Evaluation		
Combat Survivor Evader Locator	D-2001-036 (11)	1) Affordability 2) Requirements	Test and Evaluation	1) Acquisition Logistics 2) Hazardous Materials 3) Interoperability	
Common Low Observable Verification System	DW001003 (19)				Effectiveness of selected acquisition and financial management strategies
Countermeasures Detection and Control Set	N2001-0018 (4)			Life-Cycle Cost	
Deliberate & Crisis Action Planning & Execution System	DH000015 (36)		Contract Management		
Expeditionary Integrated Combat OPS Center	N2001-0018 (4)			Life-Cycle Cost	
F-14B Upgrade	N2001-0018 (4)			Life-Cycle Cost	
Global Theater Weather Analysis & Prediction System	DH000015 (36)		Contract Management		
Joint Biological Point Detection System	D-2000-187 (23)	Affordability	Test and Evaluation		
Heavy Expanded Mobility Tactical Truck	AA01-023 (18)		Test and Evaluation		
High Mobility Multi-Purpose Wheeled Vehicle	AA01-023 (18)		Test and Evaluation		
High Mobility Trailers	NSAID-00-15 (50)	Affordability	1) Acquisition Strategy 2) Test and Evaluation		
M113 Family of Vehicles	AA01-023 (18)		Test and Evaluation		
M9 Armored Combat Earth Mover	AA01-023 (18)		Test and Evaluation		

³ Number in parentheses indicates location of report in Appendix B.

Acquisition Program	Report No.	Program Definition Elements	Program Structure Elements	Program Design Elements	Other Areas Reviewed
Naval Fire Control System	N2000-0027 (32)			Acquisition Logistics	
OE 538/BRC Multifunction Mast Antenna	N2000-0027 (32)			Acquisition Logistics	
Officer Tactical Command Info Exchange Subsystem/Tactical Data Info Exchange Subsystem	N2001-0018 (4)			Life-Cycle Cost	
Predator Short Range Assault Weapon	AA01-023 (18)		Test & Evaluation		
	N2000-0040 (25)	1) Analysis of Alternatives 2) Requirements	1) Acquisition Strategy 2) Program Goals		
	N2001-0018 (4)			Life-Cycle Cost	
Shadow 200 Unmanned Aerial Vehicle	NSIAD-00-204 (21)	1) Affordability 2) Requirements	Acquisition Strategy		
	GAO-01-288 (6)	Requirements			
SLBM Retargeting System	N2001-0018 (4)			Life-Cycle Cost	
Tactical Tomahawk Weapon Control System	N2001-0018 (4)			Life-Cycle Cost	
TB-29 Towed Array	N2000-0027 (32)			Acquisition Logistics	
	N2001-0018 (4)			Life-Cycle Cost	

Appendix G. ACAT IV Programs Reviewed

Acquisition Program	Report No. ⁴	Program Definition Elements	Program Structure Elements	Program Design Elements	Other Areas Reviewed
Acoustic Firing System	N2001-0018 (4)			Life-Cycle Cost	
Advanced Radiographic System	N2000-0027 (32)			Acquisition Logistics	
Advanced Tactical Air C2	N2001-0018 (4)			Life-Cycle Cost	
AQM-37C Supersonic Target	N2001-0018 (4)			Life-Cycle Cost	
Close Quarters Battle Weapon	N2001-0018 (4)			Life-Cycle Cost	
Combat Shotgun	N2001-0018 (4)			Life-Cycle Cost	
Composite Pumps	N2001-0018 (4)			Life-Cycle Cost	
CVC Helmet Intercomm	N2001-0018 (4)			Life-Cycle Cost	
Digital Interrogator	N2001-0018 (4)			Life-Cycle Cost	
EC Shallow Water Undersea Warfare Training Range Program	N2001-0018 (4)			Life-Cycle Cost	
Enhanced Naval Wargaming System	N2001-0018 (4)			Life-Cycle Cost	
Improved BIVY Sack	N2001-0018 (4)			Life-Cycle Cost	
Improved Direct Air Support Center Product Improvement	N2001-0018 (4)			Life-Cycle Cost	
Improved Frensel Lens Optical Landing System	N2001-0018 (4)			Life-Cycle Cost	
Improved Trigger Finger Mitten	N2001-0018 (4)			Life-Cycle Cost	
Infantry Combat Boot	N2001-0018 (4)			Life-Cycle Cost	
Launched Expendable Acoustic Device	N2000-0027 (32)			Acquisition Logistics	
Legacy Automated Test Equipment Offload to the Consolidated Automated Support System Program	N2001-0018 (4)			Life-Cycle Cost	
Marine Heavy Equipment Transporter Capability	N2001-0018 (4)			Life-Cycle Cost	
Maintenance Cellular Information Exchange System	N2001-0018 (4)			Life-Cycle Cost	
Medium Machine Gun Tripod	N2001-0018 (4)			Life-Cycle Cost	
Modular Sleeping Bag	N2001-0018 (4)			Life-Cycle Cost	
Multi Purpose Cart	N2001-0018 (4)			Life-Cycle Cost	
Powered Multi Fuel Burner	N2001-0018 (4)			Life-Cycle Cost	

⁴ Number in parentheses indicates location of report in Appendix B.

Acquisition Program	Report No.	Program Definition Elements	Program Structure Elements	Program Design Elements	Other Areas Reviewed
Remote Sensing Chemical Agent Alarm	N2001-0018 (4)			Life-Cycle Cost	
Shipboard Firefighting Truck	N2001-0018 (4)			Life-Cycle Cost	
Ski March Boot	N2001-0018 (4)			Life-Cycle Cost	
Special Operation Forces Laser Marker	N2001-0018 (4)			Life-Cycle Cost	
Sub Rescue Diving and Recompression System	N2000-0027 (32)			Acquisition Logistics	
Supersonic Sea Targeting Threat	N2001-0018 (4)			Life-Cycle Cost	
Tactical Combat Operations	N2001-0018 (4)			Life-Cycle Cost	
Technical Surveillance Countermeasures	N2001-0018 (4)			Life-Cycle Cost	
UH-3H	N2001-0018 (4)			Life-Cycle Cost	
VTC Information Exchange System	N2001-0018 (4)			Life-Cycle Cost	

Appendix H. Matrix of Systemic Weaknesses

Report No.	Acquisition Strategy	Affordability/ Cost	Program Goals	Hazardous Material Management	Open Systems	Requirements	Test and Evaluation	Total Ownership/ Life-Cycle Cost
GAO								
GAO-01-310		X	X				X	
GAO-01-288						X		
GAO-01-6			X					
GAO-01-369R							X	
GAO-01-228R		X						
GAO-01-74		X				X		
NSIAD-00-197								X
NSIAD-00-165								X
NSIAD-00-204	X							
NSIAD-00-178		X						
NSIAD-00-182		X						
NSIAD-00-153		X				X		
NSIAD-00-158		X						
NSIAD-00-74	X							
NSIAD-00-75	X							
NSAID-00-78		X						
NSIAD-00-68		X						
NSAID-00-28			X					
NSAID-00-15	X	X						
IG, DoD								
D-2001-093	X						X	
D-2001-089								
D-2001-086							X	
D-2001-066	X							
D-2001-036								
D-2001-032			X					
D-2001-012	X							
D-2000-187								
D-2000-174							X	
D-2000-163							X	
D-2000-149					X			
D-2000-121				X				
D-2000-092				X				X
D-2000-070								
D-2000-022				X				
D-2000-012				X				

Report No.	Acquisition Strategy	Affordability/ Cost	Program Goals	Hazardous Material Management	Open Systems	Requirements	Test and Evaluation	Total Ownership /Life-Cycle Cost
Army Audit Agency								
AA01-128						X		
AA01-087	X					X		
AA01-023							X	
AA00-341								
AA00-016								
Naval Audit Service								
N2001-0018								X
N2000-0040			X					
N2000-0027								
N2000-0015								
Air Force Audit Agency								
01064010							X	
DW001003	X							
99064023								
DD000010							X	
DH000015								
99064028								
97064003				X				X
98064003								

Appendix I. Report Distribution

Office of the Secretary of Defense

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Other Defense Organizations

Director, Defense Contract Audit Agency
Director, Defense Contract Management Agency

Congressional Committees and Subcommittees, Chairman and Ranking Minority Member

Senate Committee on Appropriations
Senate Subcommittee on Defense, Committee on Appropriations
Senate Committee on Armed Services
Senate Subcommittee on Acquisition and Technology, Committee on Armed Services
Senate Committee on Governmental Affairs
House Committee on Appropriations
House Subcommittee on Defense, Committee on Appropriations
House Committee on Armed Services
House Committee on Government Reform
House Subcommittee on Government Efficiency, Financial Management, and Intergovernmental Relations, Committee on Government Reform
House Subcommittee on National Security, Veterans Affairs, and International Relations, Committee on Government Reform
House Subcommittee on Technology and Procurement Policy, Committee on Government Reform

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